IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

IN THE APPLICATION OF:

J. L. SUMIEJSKI, C. D. TIPTON; & J. C. SMOGGIE

DOCKET NO.: 3218R CUSTOMER NUMBER: 26645

SERIAL NO.: 10/621,154 EXAMINER: S. COSTALES

FILED: JULY 13, 2003 GROUP ART UNIT: 1764

TITLE: **Transmission Lubricating Compositions with Improved Performance, Containing Acid/Polyamine Condensation Product**

Wickliffe, Ohio

Hon. Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Declaration Under Rule 132

Sir,

I, Richard Vickerman, declare as follows:

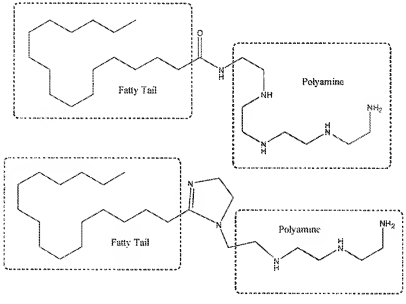
I received a Bachelor of Science degree in 1989 from Lawrence Technological University in Southfield, Michigan and both a Master of Science degree and Doctoral degree in the field of organic chemistry from Case Western Reserve University in 1996 and 1999, respectively.

I have been employed by The Lubrizol Corporation since 1990. From 2004 to 2006 I was a Technology Manager in the research division responsible for the development friction modifiers and corrosion inhibitors for the corporation. In 2006 I was promoted to Strategic Technology Manager for the driveline group of Lubrizol (including automatic transmissions). I am presently responsible for coordinating the long term research and development efforts for fundamental knowledge, new formulating components and new test development for lubricants for automatic transmissions, continuously variable transmissions, dual clutch transmissions, manual transmissions and farm tractors. As a result, I am very familiar with the invention claimed in the above-mentioned case and with the references which were used in the rejection thereof.

The Examiner stated that the data presented was not reasonably commensurate in scope with the claims given that the data was only for the condensation product of isostearic acid +

tetraethylenepentamine which provided mixtures of Formula (III) and Formula (IV) as taught by me in the declaration filed on 10/10/2008. However, the Examiner was of the opinion that the claims are drawn to embodiments that can only have one of each of Formula (III) or Formula (IV). As I mentioned in my declaration of 10/10/2008, our material is a combination of both imidazoline and amide species with ratio dependent on the severity of the reaction conditions and extent of water removal.

In considering the performance of the condensation products, it is important to view the molecule as a whole, containing three parts: a Fatty tail, a Connecting group, and a Polyamine head or polar portion. The figure below shows these parts for stearic acid + tetraethylenepentamine reaction products. Isostearic acid is a mixture of branched C18 isomers which would be difficult to represent pictorially; the same analysis holds, however.



With these drawings my intent is to show that the physical difference between these two species is small. The performance of these condensation products comes primarily from the fatty acid and polyamine moieties and only minimally from the connecting group. Moreover, it can be seen in the figure that both connecting groups are very similar, containing only two hetroatoms, one oxygen and one nitrogen in the amide moiety and two nitrogen atoms in the imidazoline moiety, with both heteroatoms in the same respective oxidations states. As a result, the surface activity of these two moieties is very similar. Taking all of this into consideration it is evident that there are significant structural similarities between the amide species and the imidazoline species and as a result one would understand that these two species will have similar performance properties.

The connection between the fatty tail and polyamine is conveniently and cost effectively achieved on an industrial scale using a condensation reaction between the carboxylic acid form of the fatty portion and one or two of the amine's nitrogens. Also necessary on an industrial scale is the high conversion rate of fatty acid and polyamine to the condensation product, since it is difficult and expensive to remove these unreacted species from the condensation product. Unreacted fatty acid and unreacted polyamine in the friction modifier, even in small amounts, are detrimental to the performance of the final lubricant formulation. Imidazoline formation in this reaction is a consequence of trying to achieve complete conversion of the starting reactants to the product. It is possible to further process the friction modifier to eliminate the imidazoline, but based on our performance data the additional processing costs of doing this would be incurred unnecessarily. We therefore use the condensation product directly from the condensation step and do not further process the material to remove the imidazoline.

I further declare that all statements herein made of my own knowledge are true and all statements herein made on information and belief are believed to be true. I understand that wilful false statements and the like are punishable by fine or imprisonment or both (18 U.S.C. 1001) and may jeopardize the validity of the application or any patent issuing thereon.

Richard Vickerman

3/17/09

Date